

**BRIAN H. TOBY****Supervisory Chemist**

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**RESEARCH INTERESTS:**

- Molecular sieve structure-property relationships
- Crystallographic studies of solid state materials
- Nonperiodic behavior (local distortions) in crystalline materials
- Novel powder diffraction structural analysis techniques
- Powder diffraction instrumentation and data processing techniques
- Novel neutron single-crystal instrumentation
- Molecular modeling studies of inorganic and organometallic materials

**EDUCATION AND DEGREES:**

Ph.D., Physical Chemistry, California Institute of Technology, 1986

BA, Chemistry, Rutgers College, 1980

**PROFESSIONAL EXPERIENCE:**

NIST Center for Neutron Research, Leader of the Crystallography Team 1998-present, Chemist 1995-present.

Air Products and Chemicals, Inc., Central Research Services Dept., Senior Principal Research Chemist 1993-1995, Principal Research Chemist, 1991-1993.

University of Pennsylvania, Department of Materials Science and the Laboratory for Research on the Structure of Matter, Lecturer 1990-1991, Research Associate, 1988-1990.

Union Carbide, Corp., Central Scientific Lab., Senior Chemist, 1985-1988.

**AWARDS:**

BA awarded with Honors and Highest Distinction in Chemistry, 1980

Phi Beta Kappa, 1980

Henry Rutgers Scholar, 1980

American Institute of Chemists Undergraduate Award, 1980

**PUBLICATIONS:**

Total publications: 75 (as of August 2002)

Recent and Noteworthy Publications:

**Journal of Applied Crystallography**, 35 191-195 (2002) (with Zeitler, T. R.) *Parallel Processing for Rietveld Refinement*.

**Nature**, 413 (6856) 652-652 (2001) (with Kuznicki, S. M., Bell, V. A., Nair, S., Hillhouse, H. W., Jacubinas, R. M., Braunbarth, C. M., and Tsapatsis, M.) *A titanosilicate molecular sieve with adjustable pores for size-selective adsorption of molecules*; **Journal of the American Chemical Society**, 123 (51)12781-12790 (2001) (with Nair, S., Tsapatsis, M., and Kuznicki, S. M.) *A Study of Heat-Treatment Induced Framework Contraction in Strontium-ETS-4 by Powder Neutron Diffraction and Vibrational Spectroscopy*.

**Journal of Applied Crystallography**, 34 210-213 (2001) *EXPGUI, a Graphical User Interface for GSAS*.

- Journal of the Chemical Society, Chemical Communications**, 2000 (22) 2221-2222 (2000) (with Reisner, B. A., Lee, Y., Jones, G., Hanson, J. C., Freitag, A., Parise, J. B., Corbin, D. R., Larese, J. Z., and Kahlenberg, V.) *Understanding negative thermal expansion and "trap door" cation relocations in zeolite RHO.*
- Journal of the American Chemical Society**, 122 11023-11024 (2000) (with Park, S.-H., Parise, J. B., Gies, H., Liu, H., and Grey, C. P.) *A New Porous Lithosilicate with a High Ionic Conductivity and Ion-exchange Capacity.*
- Microporous and Mesoporous Materials**, 39 (1-2) 77-89 (2000) (with Khosrovani, N., Dartt, C. B., Davis, M. E., and Parise, J. B.) *Structure-directing Agents and Stacking Faults in the CON System: A Combined Crystallographic and Computer Simulation Study.*
- Science**, 273 (5271) 81-84 (1996) (with Subramanian M. A., Ramirez A. P., Marshall W. J., Sleight A. W., and Kwei G. H.) *Colossal magnetoresistance without  $Mn^{3+}/Mn^{4+}$  double exchange in the stoichiometric pyrochlore  $Tl_2Mn_2O_7$ .*
- Journal of the American Chemical Society**, 117 (43) 10694-10701 (1995) (with Ramprasad D., Pez G. P., Markley T. J., and Pearlstein R. M.) *Solid-State Lithium Cyanocobaltates with A High-Capacity for Reversible Dioxygen Binding - Synthesis, Reactivity, and Structures.*

**Thesis Advisor:**

W. Henry Weinberg, Chemical Engineering, California Institute of Technology

**Research Associateship Advisor:**

Takeshi Egami, Department of Materials Science, University of Pennsylvania

**Former Postdoctoral Fellows and Current Employer:**

Camille Y. Jones (Staff member, NIST Center for Neutron Research)

Tammy Amos (Central Research, DuPont)

So-Hyun Park (Max Plank Institute)

Barbara A. Reisner (Assistant Prof., James Madison Univ.)

Roberto Senesi (Research Staff, Istituto Nazionale di Fisica Nucleare)

Nazy Khosrovani (Molecular Simulations, Inc.)